least one set of horizontal counter-rotating drive shafts. A set of anti-swirl vanes is attached in line with the at least one propeller on either side of each propeller.--

Please replace the paragraph beginning on page 5, line 6, with the following rewritten paragraph:

--Rudder 10 in each aft strut 5 helps to steer the craft. Banking the craft into a turn by using flaps increases turn rate, and minimizes craft side force. Hinges 15 and retractors, connected to the hydrofoil and to the hull, retract the hydrofoil and permit the hydrofoil to retract rearward and upward. Sonar device 16 helps to detect underwater obstacles that lie in the path of the craft, and can also serve to generate forward-projected sounds to frighten or urge sea animals away from the path of the craft.--

Please replace the paragraph beginning on page 5, line 10, with the following rewritten paragraph:

-- An automatic control system 201 is connected to outboard flaps 17 and inboard flaps 18. Outboard trailing edge flaps 17 serve to control craft roll and pitch, and together with inboard flaps 18, serve to control craft height. Fences 19, wetted pods 12, and wetted region 20 serve as fences to separate adjacent spanwise cavities on the hydrofoil in the case where the hydrofoil is supplied with gas cavities to reduce drag. Plural jets 203 supply gas to each adjacent cavity. Bearings and gearing are provided for the drive shaft. Gas ducting along the drive shaft serves to cool the bearings and gearing. Projection 21 on the underside of hull 2 at the center helps to reduce forward strut height, and to cushion bow impacts when operating in large waves.

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Please replace the paragraph beginning on page 5, line 15, with the following rewritten paragraph:

--A sweptback v-hydrofoil that is placed at a small angle of attack can appear to have a small negative dihedral 22, or it can be designed for a negative dihedral; in either case, it will appear somewhat as shown in Fig. 3. Alternatively, for dynamic reasons in some cases, a v-hydrofoil might be designed with a positive dihedral 23, as shown in Fig. 4. The angle of attack reduces towards each tip.--

Please replace the paragraph beginning on page 5, line 21, with the following rewritten paragraph:

-- Fig. 5 illustrates a hydrofoil 25 whose sweep is reversed from that of hydrofoil 3 in Fig. 2. From the viewpoint of foil sweep theory, little difference exists whether a foil is swept forward or back. The hydrofoil resembles a delta foil.--

Please replace the paragraph beginning on page 6, line 19, with the following rewritten paragraph:

-- A tail flap 29 is shown in Fig. 6 in its neutral position, and is shown deflected in Fig. 7. Note that the location of the closure points, 42 and 43, for the longer cavity on each surface has not appreciably changed, indicating that the flap can be deflected without risk of the longer cavities lengthening beyond the trailing edge, especially if the flap is long enough. If necessary, a flap chord can be increased when the flap is deflected. Placing a concave surface just ahead of the trailing edge on each side of the flap 29 will increase the cavity closure angle in the region ahead of the trailing edge to help to ensure that the longer cavities will not close behind the trailing edge.--

Please replace the paragraph beginning on page 6, line 32, with the following rewritten paragraph:

-- The special hydrofoil shape in Fig. 10 shows promise for even-greater frictional drag reduction because its only wetted surface areas are the lower surface of the nosepiece 44 and the upper surface of the trailing edge flap. Here, the upper surface is covered with closed cavity 32, and the lower surface is covered with an open, superventilated cavity 48 that closes behind the trailing edge at 49. This hydrofoil design should have very low frictional drag if the cavity merger angle at 49 is made small. Trailing edge regions have removable sections.--

Please replace the paragraph beginning on page 7, line 4, with the following rewritten paragraph:

-- The shape of a wetted hydrofoil nosepiece can be varied to change upper and lower cavity shapes, assist in controlling lift, and to reduce drag. For example, the angles of the upper and lower surfaces of wedge-shaped, flexible plate 58 can be independently controlled, controlling geometry of a hydrofoil cross-section, as shown in Fig. 11, by changing the length of actuator 60 which is attached between rigid hydrofoil center plate 55 and rigid nose plate 59 to deflect the flexible v-plates 56 and 58 either outward or inward. The lower part 57 of the nosepiece can be controlled similarly. An automatic control system 201 is provided for controlling the at least one nose flap for changing local hydrofoil lift. Changing the foil geometry can change the size of the cavity. Changing the size of a cavity can change foil lift, which in turn changes vessel height.--

Please replace the paragraph beginning on page 7, line 14, with the following rewritten paragraph:

-- Because cavity number K increases as speed reduces, cavities tend to be shorter and thicker at lower speeds. Therefore, to reduce frictional drag at lower speeds, it is necessary to

change cavity shape by either changing hydrofoil geometry, hydrofoil angle of attack, gas flow rates, cavity pressures, or combinations thereof. Various ways of changing hydrofoil geometry and hydrofoil pitch or angle of attack have been discussed. Typically, for a given hydrofoil geometry, a change in gas flow rate will provide an accompanying change in cavity pressure and shape. Thus, the gas source pressures and flow rates must be adequate to supply gas to the cavities under all of the desired operating conditions. Control of gas flow into the cavity is accomplished with a pressure of the gas source and the size of the openings. A take off mode controller 205 is provided for supplying additional gas to the cavity on the lower surface for permitting the cavity to extend beyond the trailing edge for increasing hydrofoil lift.--

Please replace the paragraph beginning on page 7, line 21, with the following rewritten paragraph:

-- In most hydrofoil designs, the cavity pressure on the upper surface is less than atmospheric pressure, in which case the upper cavity gas can be air that is drawn from the atmosphere without using an air pump. If the upper cavity pressure is low enough, then a turbine can be placed in the associated air duct to generate power. A generator 207 is connected to the craft, and air supplied to the cavity on the upper surface at a pressure lower than atmospheric pressure is used to generate power in the generator. Typically, the pressure on the lower surface of a hydrofoil is greater than atmospheric, in which case the gas, such as air, must be pressurized using a pump. However, in some cases, hydrofoil speed and geometry is such that the pressure on the lower surface of a hydrofoil, although greater than the pressure on the upper surface, can be made less than atmospheric pressure, in which case, no pump is needed and atmospheric air can be used.--

Please replace the paragraph beginning on page 7, line 29, with the following rewritten paragraph:

G11

-- For all lifting hydrofoils, the lower cavity must be at a higher pressure than the upper cavity. Consequently, there may be design cases where the simplest and best solution is to supply gas only to the lower cavity, and then duct some of the gas into the upper cavity. One such way is shown in Fig. 14 where gas from a lower cavity is passed through duct 63 to an upper cavity using orifices 64 and/or 65 to meter, or restrict, the gas flow rate. These orifices, restrictors, or limiters could be valves, or ducts 63 could be made small enough to act as a restrictor, or limiter, to meter the gas flow rate without using valves or orifices. A gas flow restrictor 209 communicates with each gas flow releaser for ensuring that each cavity closes ahead of the trailing edge.--

Please replace the paragraph beginning on page 8, line 7, with the following rewritten paragraph:

G9

-- In some cases, it is desirable to replace nosepieces, including the case where a nosepiece is damaged. The various kinds of nosepieces shown in Figs. 11-14 can be attached by various well-known methods to permit them to be removable. Leading edge regions have sections 211 that are replaceable.--

Please replace the paragraph beginning on page 8, line 13, with the following rewritten paragraph:

G10

-- The hydrofoil cross section in Fig. 17 again shows strut ducts 71 and 73 to bring gas into hydrofoil duct 69 for ejection into upper surface cavities, and into duct 70 for ejection into lower surface cavities. In this case, valves or holes 78 and 79 meter some of the gas into adjacent

spanwise ducts for distribution to other cavities located at other spanwise stations along the hydrofoil span. The gas passes through restrictor permeable walls 72 and 74 at the forward ends of the hydrofoil ducts, through slots at the front end of the upper and lower hydrofoil plates, and into the upper and lower cavities. The upper and lower surfaces of the hydrofoil are said to be substantially, or essentially, continuous in spite of the small slot aft of the nosepiece through which gas is ejected. To provide greater strength, if needed, the hydrofoil can be made solid in the mid and aft section, as shown in Fig. 17. If it is desired to remove gas from a hydrofoil cavity on one or both sides, and recycle it, then a suction inlet and gas pump, such as 75, 76, can be installed where the gas is returned by line 77 to gas duct 69 for recycling. At least one gas remover 75 is mounted near the trailing edge for removing gas from near an aft end of at least one of the cavities. A water separator 213 is connected to the at least one gas remover for separating water from the removed gas, and for recycling the removed gas.--

G10 Cont

Please replace the paragraph beginning on page 10, line 7, with the following rewritten paragraph:

-- Fig. 24 is a cross section of the upper region of the strut shown in Figs. 23A and B. Tail flap 122 is used to control strut side force for turning. The tail flap can either be deflected in the normal steady-state manner out a desired flap angle, or it can be deflected out to a fixed angle and back at a moderate frequency, sometimes called a "bang-bang" control. At least one adjustable trailing edge flap 122 is a trailing edge region of the body that extends ahead of the trailing edge over at least a portion of the trailing edge. The flap is deflected for controlling side force. Optional nose flap 135 can be deflected outward to move cavity 136 outward, if needed, to keep the cavity from wetting the strut under certain operating conditions. Alternatively, outward steps

G11

A11 cont

138 can be placed on the strut sides to deflect cavity 123 away from the strut at lower speeds, or in waves, if needed. At least one additional discontinuity 138 on each side in the upper region is positioned aft of the discontinuity near the leading edge. A nose flap 135 is positioned on each side of the body. Each nose flap has a trailing edge that provides a discontinuity on that side. Each nose flap extends along at least a portion of a span of the body and each nose flap individually pivots outward from the body about an axis that lies close to the leading edge.--

Please replace the paragraph beginning on page 11, line 18, with the following rewritten paragraph:

A12

-- Another way to stabilize a hydrofoil boat in roll is to angle the ends of hydrofoil 3 upward to pierce the water surface, as shown in Fig. 38 by a hydrofoil with midsection 165, and lifting end sections 167. In this case, fences 166 are needed to separate adjacent cavities, especially if hydrofoil section 167 is outfitted with different kinds of cavities above fence 166. Since the boat is now stabilized in roll, bow hydrofoil 163 could be replaced by bow hydrofoil 168 shown in Fig. 39, which is a surface piercing v-hydrofoil with positive dihedral. Hydrofoil 168 would provide the needed heave and pitch stability. In one embodiment, the hydrofoil is a main hydrofoil and an additional hydrofoil is mounted above the main hydrofoil for providing additional lift for takeoff and for improving operation in waves.--

Please replace the paragraph beginning on page 11, line 24, with the following rewritten paragraph:

A13

--Also shown in Fig. 39, are tip hydrofoils 169 for reducing the induced drag of the